

09732606-120600

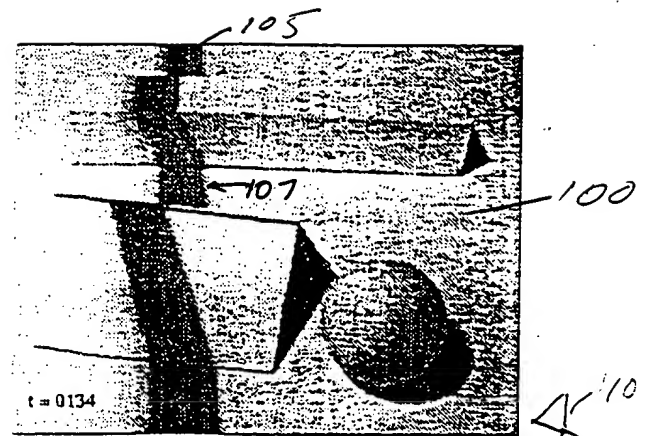


FIG 1



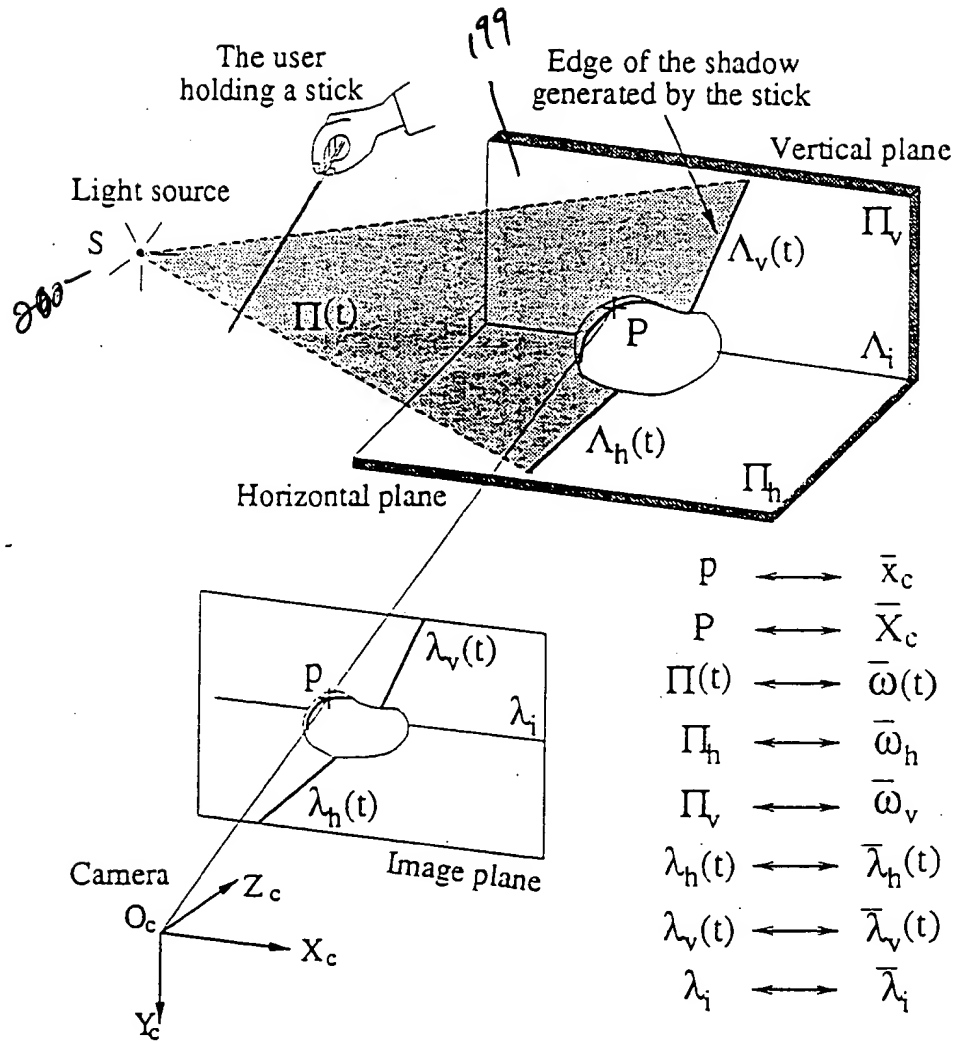


FIG. 2

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300 — Calibration - find T_H
position

305 — obtain
Image of the shadow

1) shadow time t_s at each
point
2) locate projections

310 — Convert projections (λ)
into actual shadow
into (Δ)

315 — Find shadow plane

320 — Find P & X_c
by triangulation

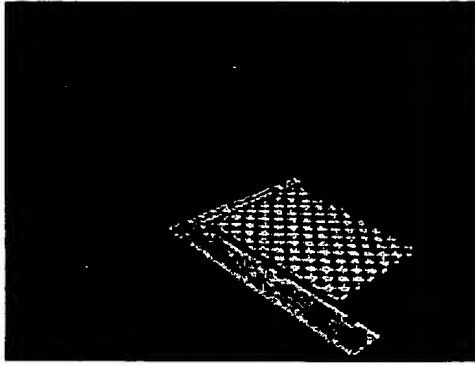


FIG 4A

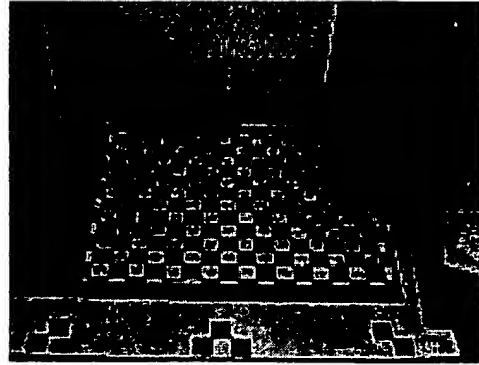


FIG 4B

00902T" 9052E 460

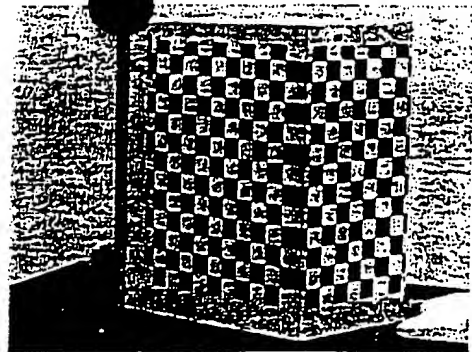


FIG. 5

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FIG. 6A

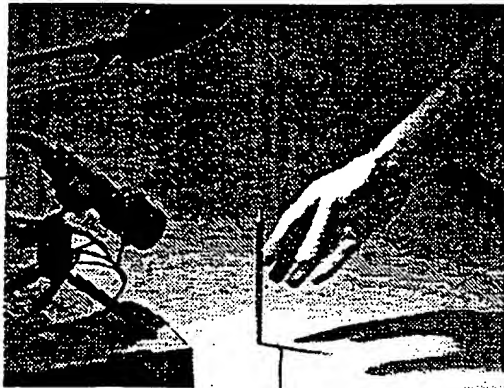
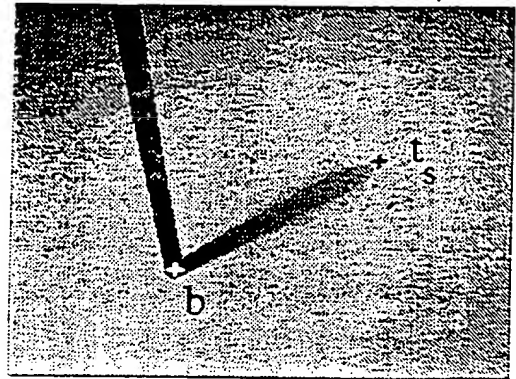


FIG. 6B

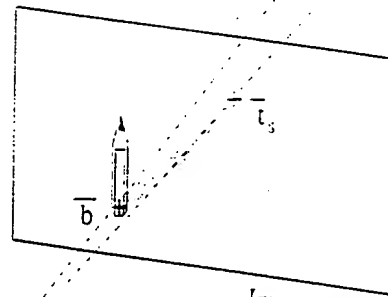
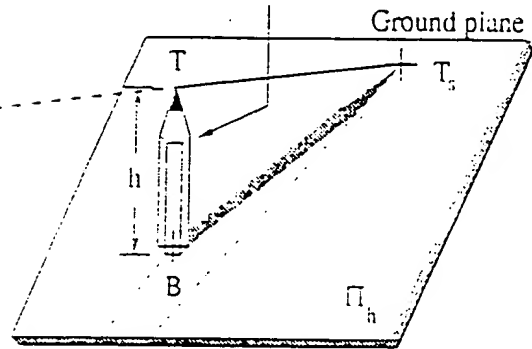


A pencil of known height h
orthogonal to the plane

Light source



S must lie on the
line $\Delta = (T, T_s)$



Camera

O_c

Y_c

Z_c

X_c

Image plane

FIG. 6C

00902T 9052E 260

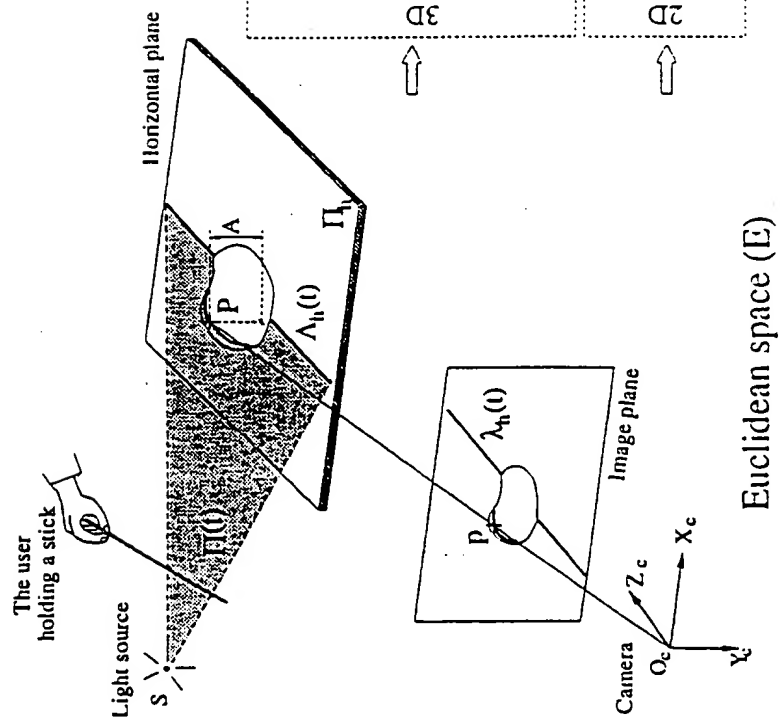
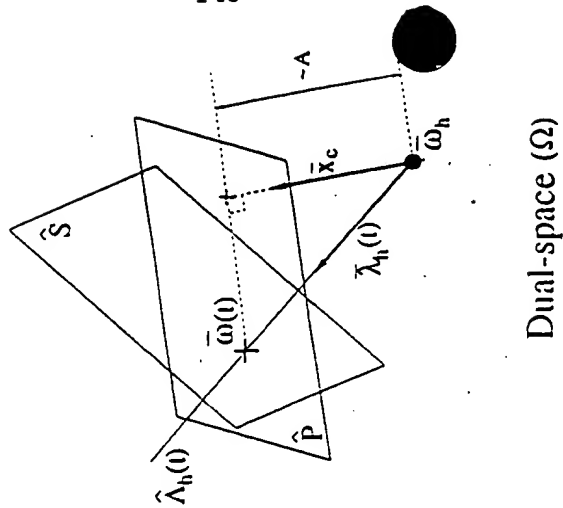


FIG. 8



Dual-space (Ω)

Euclidean space (E)

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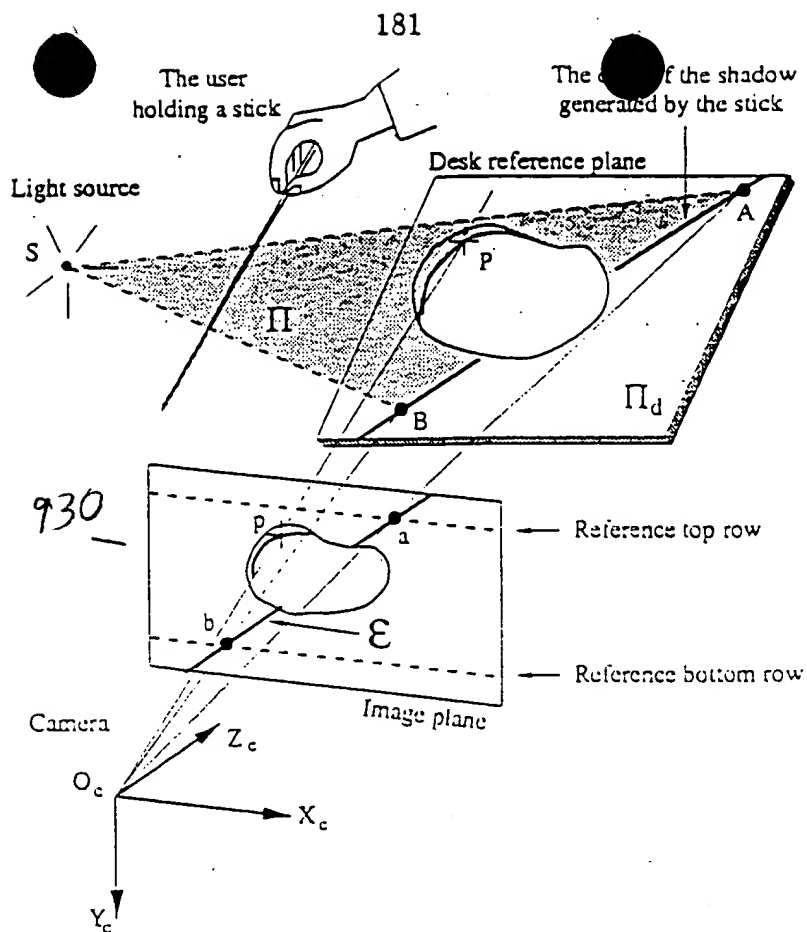


FIG.9

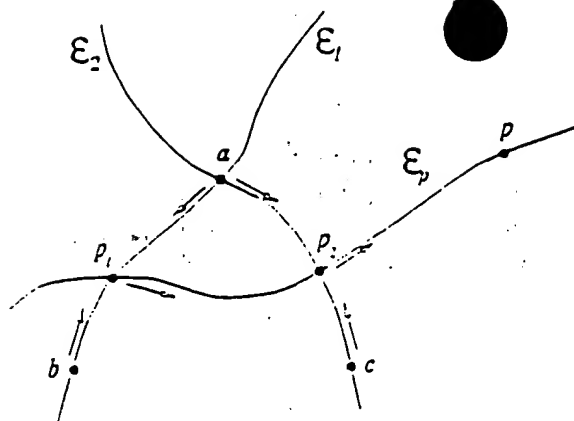


FIG-10

009021" 90522E/60

successive steps:

- 1120 /
- 1130 /
- 1140 /
- Step 1: Acquire a set shadow images, extract the shadow edges and compute their intersections.
 - Step 2: Reject all isolated edges (and isolated groups of edges) so that the entire edge-web is fully connected (def. 2). Results a set of N edges \mathcal{E}_i , and N_p intersection points p_i .
 - Step 3: Build the $2N \times 2N$ matrix C (eq. 7.10, 7.11 and 7.12), and compute the unitary seed vector \bar{U}^o by SVD. Euclidean reconstruction is then achieved up to the three scalars α , β and γ .
 - Step 4: Select (at least) three points in the scene with known depths, and solve linearly for the remaining scalars α , β and γ (eq. 7.13).
 - Step 5: Compute the list of shadow plane vectors $\bar{\omega}_i$ (eq. 7.7 and 7.2) and triangulate all the points in the edge-web. The resulting set of 3D points may then be triangulated into a surface mesh for visualization purposes (fig. 7.5 and 7.6).

FIG. 11

0050307 50502260

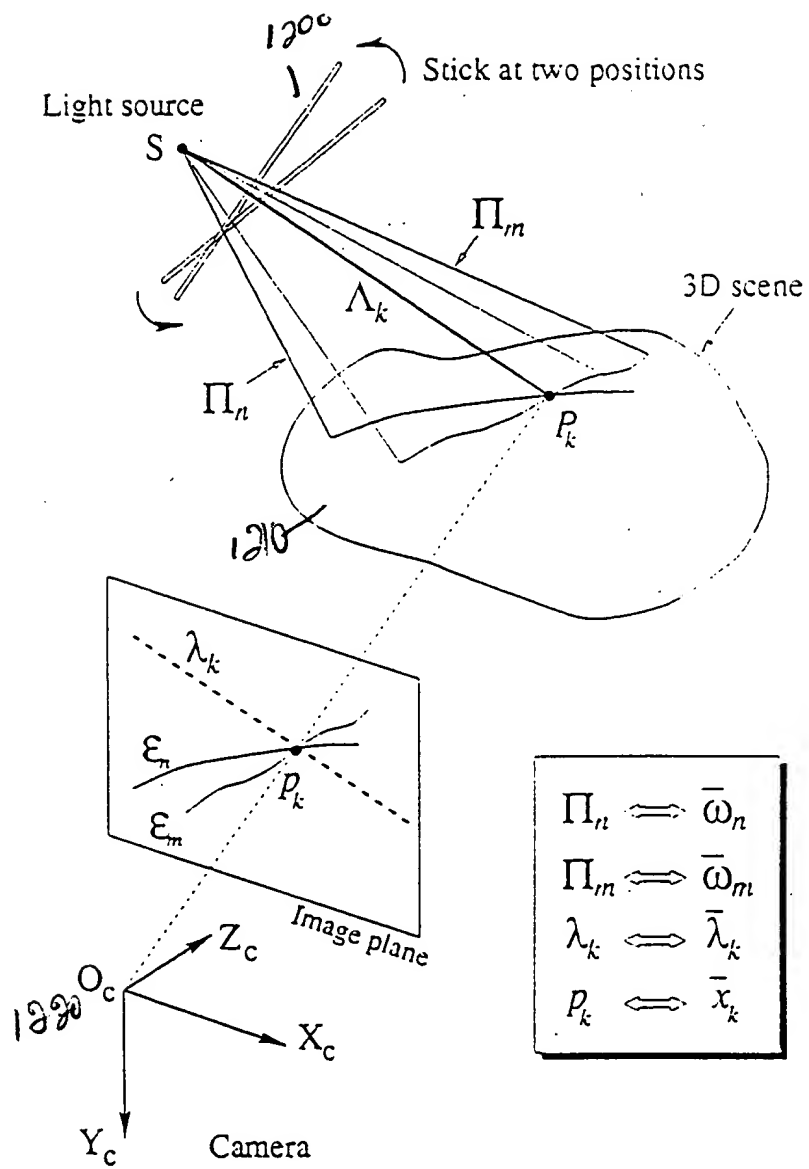


FIG. 12

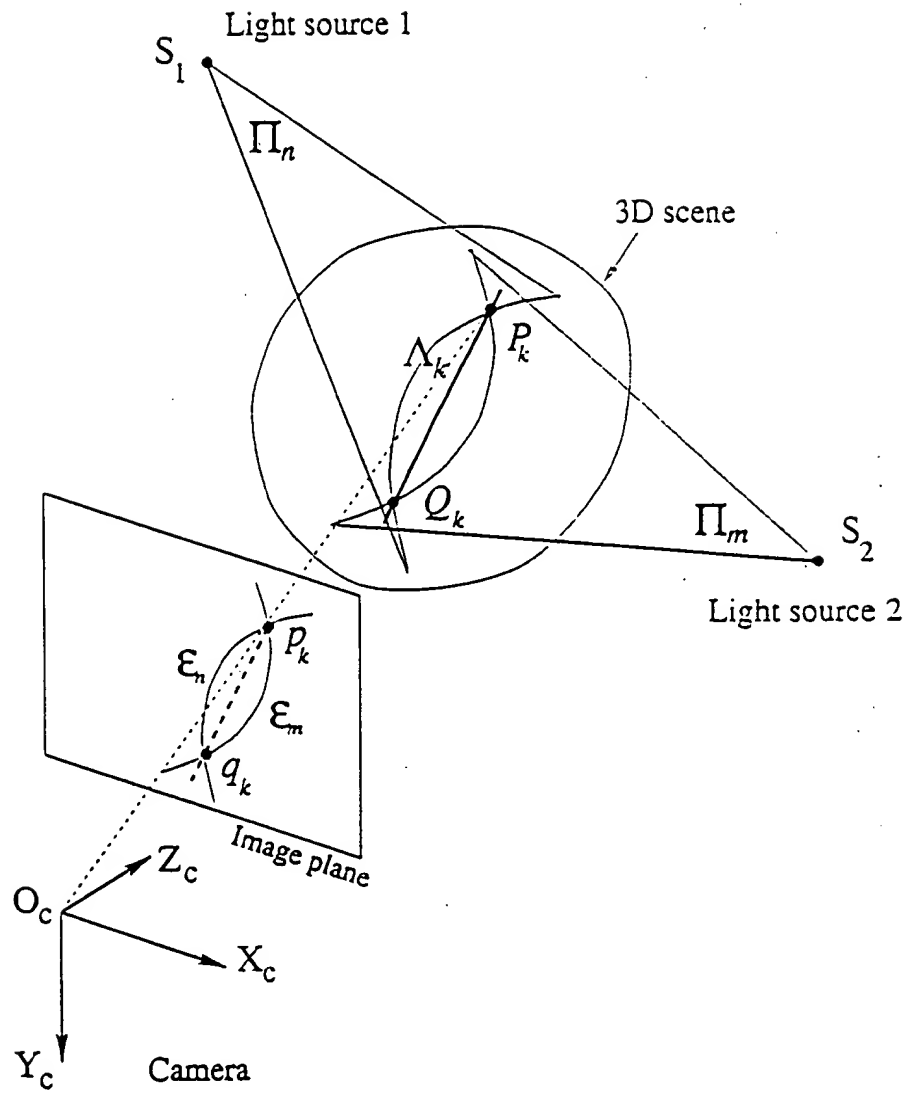


FIG. 14

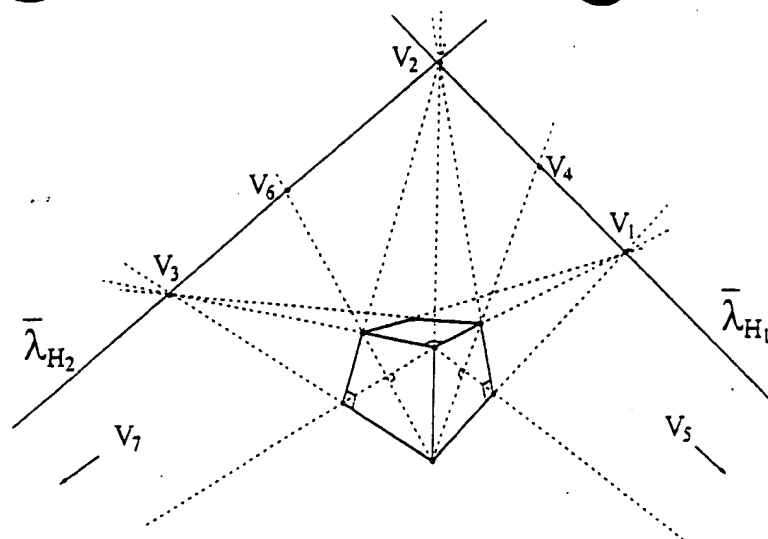


FIG. 16

00922506 120500